REMARKS

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing Amendment, claims 1, 4-13, and 20-69 are pending in the Application, with claims 2, 3, and 14-19 cancelled without prejudice to or disclaimer of the subject matter therein. Claims 1, 4, 6-13, and 16-62 stand rejected, and claim 5 stands objected to for relying on a rejected base claim.

The Amendment accompanying this response is believed to introduce no new matter and its entry is respectfully requested. The amendments therein are made to advance prosecution and should not be construed to be related to patentability. Support for the amendments to claims 1, 13, and 33 is found in paragraphs [0002], [0010], and throughout the specification. Further support for the amendment to claim 33 is found in paragraph [0019]. Amendments to claims 34, 35, 59, and 60 were made solely to correct typographical errors, have no bearing on patentability, and are supported throughout the specification. Support for added claims 63-69 is found in original claims 16-19, in paragraph [0019], and throughout the specification.

Based on the above Amendment and the following remarks, applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and allow the pending claims.

Claim Objections

The Examiner has objected to claims 13 and 59 for reasons related to punctuation. Applicants have corrected the punctuation as suggested by the Examiner and ask that the objections be withdrawn.

The Examiner has also objected to claims 16 and 18 as improper dependent claims for numerically preceding the claim from which they depend, claim 58. Claims 16 through 19 have been cancelled and rewritten as claims 63-66, which succeed claim 58. Applicants submit that these claims are now in allowable form and request that the objections be withdrawn.

Rejection under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claim 33 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. Particularly, the Office Action suggests that the use of the word "like" in the phrase "slurry-like consistency" renders vague the description of the condition of the isosorbide.

To advance prosecution, Applicants have amended claim 33 to remove the word "like" from the claim. The description of the condition of the isosorbide being clearly defined, Applicants request that the rejection be withdrawn and the claim allowed.

Rejections under 35 U.S.C. § 103(a)

I. There is no motivation to combine Hartmann and Feldmann.

The Examiner has rejected claims 1, 4, 6-13, and 16-62 under 35 U.S.C. § 103(a) as unpatentable over United States Patent No. 3,160,641 to Hartmann in light of United States Patent No. 4,564,692 to Feldmann *et al.* The Office Action states that Hartmann discloses a process of preparing isosorbide by the acid catalyzed dehydration product of sorbitol in the presence of an acid dehydration catalyst, then distilling the reaction mixture to recover isosorbide at low pressures in a range of temperatures. The Office Action further notes that that Hartmann differs from the instant invention by not including filtering or centrifuging the anhydrosugar

alcohol and by stating different parameters for distillation temperature, amount of added acidic ion exchange resin, and cooling period.

The Office Action characterizes Feldmann as teaching a purification process by "crystallization from a concentrated solution in the absence of organic crystallization solvents." (citations omitted). The Office Action further states that Feldmann obtains aqueous anhydrosugar alcohol solutions from acid-catalyzed dehydration of hexitols with strongly acidic cation exchange resins. Finally, the Office Action states that Feldmann teaches successive fractional crystallization to produce pure crystalline product.

The Office Action reasons, "[I]t would have been obvious to the skilled artisan in the art to have motivated to incorporate the Feldmann *et al.* crystallization technique into Hartmann in order to further purify the desired product suitable for producing polyesters." The Office Action concludes, "This is because the skilled artisan in the art would expect to improve on the purity of the desired compound by applying the Feldmann *et al.* crystallization technique to the Hartmann process."

Applicants respectfully disagree with the conclusion reached in the Office Action. The claims of the instant invention are not obvious in light of Hartmann, read in view of Feldmann, *et al.* It is well-established that there must be some suggestion or motivation in the references cited by the Examiner to combine reference teachings to obtain Applicants' invention. *In re Rouffet*, 149, F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998); M.P.E.P. § 2143.01. The suggestion to combine the references may not come from the level of skill in the art. *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999); M.P.E.P. § 2143.01. Furthermore, merely because two references *can* be combined does not make the combination

obvious unless the combination is also suggested by the prior art. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

Applicants submit that there is neither a suggestion nor any motivation for one skilled in the art to combine the Hartmann and Feldmann references. To the contrary, Feldmann characterizes Hartmann as disclosing a process for "removal of impurities by complexing them with the borate ion before distillation." (Col. 1, l. 44-46). Feldmann then notes that Hartmann and another process "fail to give a product of sufficient purity" and are "not economical." Furthermore, Feldmann states that Hartmann's "residual amounts of crystallization solvents" make the process unsuitable for certain uses. (Col. 1, l. 52-58). One of the objects of Feldmann is to obtain "pure anhydro sugar alcohols from reaction mixtures that have only been prepurified by means of ion exchangers and/or activated carbon." (Col. 2, l. 1-3). No mention is made in Feldmann of the use of the Hartmann process or any elements of the Hartmann process, and use of the Hartmann process is explicitly disclaimed in Feldmann.

Applicants further submit that Hartmann is used in the Office Action to support an alleged method for production of isosorbide that is in fact disparaged in Hartmann, and for which Hartmann is not enabled. For a § 103(a) rejection to be effective, all limitations of the rejected claims must be taught by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); M.P.E.P. § 2143.03. Furthermore, cited art must be considered as a whole, including portions that teach away from the invention.

The Office Action states that Hartmann "discloses a process of preparing isosorbide by the acid catalyzed dehydration product of sorbitol in the presence of an acid dehydration catalyst such as sulfuric acid." (Office Action at 4). Although this may be an accurate characterization of the text of Hartmann at column 1, lines 9-14, Hartmann goes on to indicate that such processes

are not economically viable at column 1, lines 32-34. The ranges that cited in the Office Action as demonstrating reaction conditions for the preparation allegedly reported in column 1 of Hartmann do not refer to that manner of preparation; instead, the exemplary values at column 2, lines 48 and 50 refer to values used for the borate ion preparation claimed by Hartmann. Borate ion purification is not among the claimed elements in the present invention.

II. Even if combined the references would not teach the claimed invention.

Even if there were some motivation to combine Hartmann and Feldmann, one skilled in the art would have no reasonable expectation that their combination would lead to the successful process claimed in the application. It is well-established that a reasonable chance for success is required for a combination to render claims *prima facie* obvious. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986); M.P.E.P. § 2143.02. As discussed previously in this Response, Hartmann includes no enabled teachings for the method for which it is cited in the Office Action. If one skilled in the art relied on Hartmann, the resulting process would require boron addition. Furthermore, Hartmann does not mention solid acid catalysis. Hartmann also does not contemplate the benefits of performing the catalyzed dehydration without a solvent.

Feldmann similarly fails to teach a method of purification that would allow one skilled in the art to practice the invention of the claims. Feldmann requires addition of seed crystals. Feldmann also requires use of a concentrated aqueous solution, neither of which is required in the instant invention.

Even if one skilled in the art were motivated to combine Hartmann and Feldmann for synthesis of anhydrosugar alcohols, the resulting synthesis would not resemble the claimed process. Such a hypothetical process would involve dehydration in the presence of a solvent and

borate ions, then purification in the presence of solvents and with seed crystals. This is not the invention set forth in the claims of the instant application.

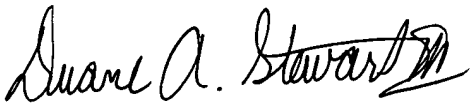
No motivation to combine the two references is found within the references themselves, and the references teach away from their combination. One skilled in the art would not be motivated to combine the two references, and they should therefore not be used in a rejection under § 103(a). Even if there were some suggestion for combination of the references, Hartmann does not teach the information for which it is relied upon by the Office Action, and combination of the references would not yield the claimed invention. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and as such, the present Application is in condition for allowance. If the Examiner believes for any reason that personal communication will expedite prosecution of this Application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,



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